

Linear Motion Systems 2006



**“Specialist in Mechanical Motion”
From Components to Complete Motion Systems**

www.smi4motion.com

**TOLL FREE (800) 283-3411
FAX (951) 735-8915**

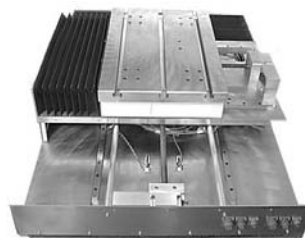
SMI
SPECIALTY MOTIONS, INC.

6 axis robot loaders to miniature multi-axis micrometer driven stages. This catalog represents what we consider standard units, but by no means represents limitations to your creativity and actual application needs. Call SMI for a custom solution to fit your needs.

A small sampling of previous SMI solutions

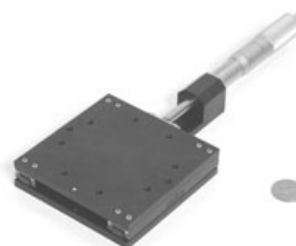
T-SLOT TABLES

- All stainless steel T-slot XY table
- Design with ground ball screw
- Servo wrap drive
- All external connectors for switches
- Designed for integration with vacuum welder
- Optional motion control cabinet assembly



MICRO FICHE SCREEN ADJUSTER

- Off-the-shelf **SMI ball slides** placed between 2 machined plates
- Aluminum construction with black anodized finish
- Manual, stainless steel lead screw drive
- Simple solution to a complex application

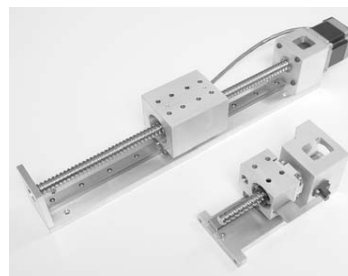


QUIET DRIVE STAGES

- Clean medical design for high volume, low cost and quiet
- Teflon coated lead screw
- Precision grade profile rail
- Stepper or servo drive

LOW COST STAGES

- Very high volume, simple and fast
- High lead ball screw
- Single carriage with sensors
- All bearing design for high duty cycle and long life

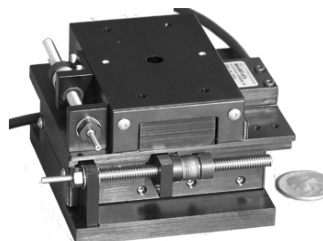


HAND DRIVEN XY STAGES WITH BRAKE

- Simple, cost effective
- Hand driven stage with lead screw and crank drive
- Can be configured in a multitude of lengths and sizes
- Accuracy .002" / foot
- Smooth, steady motion

CROSS ROLLER POSITIONING STAGES BY SMI

- Ideal for applications that require higher load capacity and accuracy
- Higher load capacity gives ability for more applications and longer life

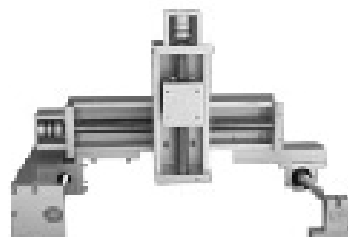


BALL SLIDES FROM SMI

- Low Friction fits in all miniature applications.
- Small enough to fit even in your smallest envelope.
- Miniature linear stages in a box.

XYZ STAGES

- High accuracy, high duty cycle
- Clean medical related design
- Designed for stepper or servo motors
- All switches built inside and covered



Don't Stop Here... SMI has the capability to go the extra step.
Design the system, select and machine components, assemble, QC, motorize and control it.
Let SMI design your next linear solution.

Linear Motion Systems and Stages 2006



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See SMI Web site at WWW.SMI4MOTIONS.COM for Terms And Conditions.

Specialty Motions, Inc. 2006

The XLA Linear Motion System

LONG TRAVEL - RIGID CONSTRUCTION - HIGH LOAD CAPACITY

RIGID

- The XLA base is a proprietary extrusion designed as a structural member of a mechanical motion system where high moments of inertia are present. Machined complete in long lengths to ensure flatness and parallelism as a single integral unit.

PRECISE

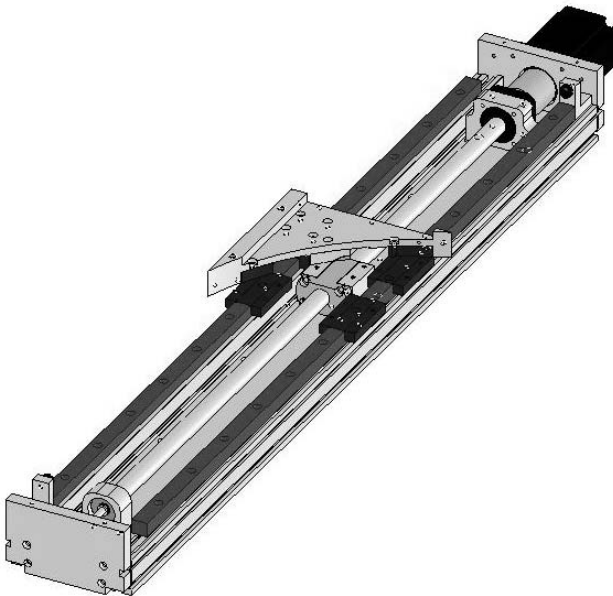
- Able to maintain positional accuracies of 0.0003" per foot and straight-line accuracies of 0.0001" per Inch.

HIGH CAPACITY

- Designed to provide extremely high load capacity in Pitch, Roll and Yaw directions.

MODULAR

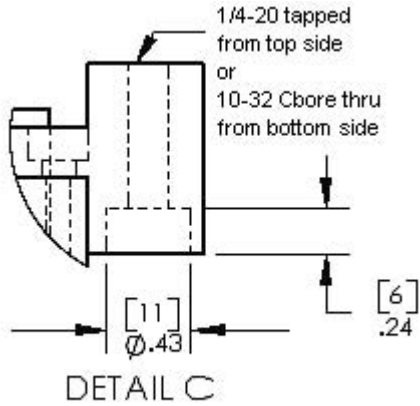
- Compatible with current T-Slot extrusion manufacturers to allow integration as a structural member into a complete base and/or system.



- SMI's XLA is a drop in replacement to high cost competitors' standard sizes.
- Low maintenance cost using replaceable components if worn or damaged.
- Carriage top designed for bottom up or top down mounting.
- Way covers and Bellow covers are an option.
- Lead Screw or Ball Screw driven with travel stops for added protection.

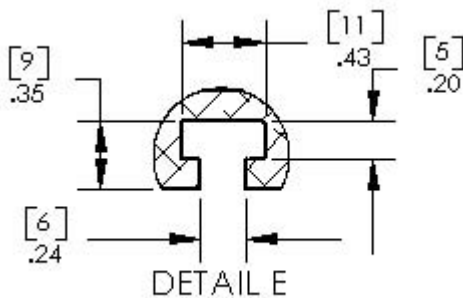
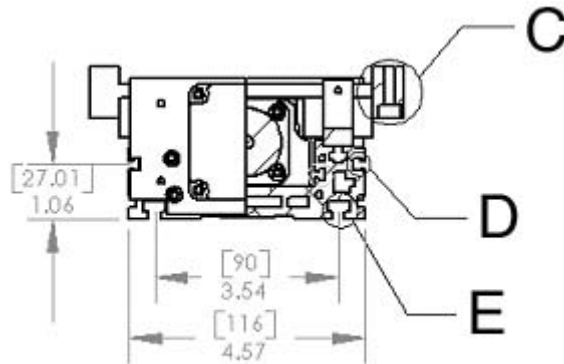
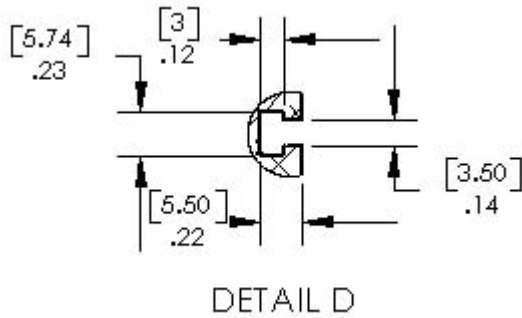
COMPLETE

- Systems come complete with Nema 23 high torque stepper motors and servo class coupler standard.
- Standard travel lengths start at 8 inches and can be as long as 72 inches as a single base construction. Longer lengths can be achieved. Call SMI for creative assistance.

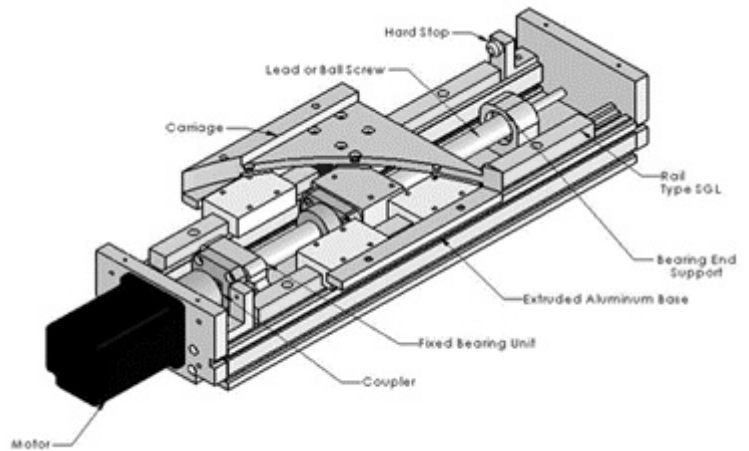


Construction: 6061 extruded aluminum base and carriage
Finish: black or clear anodized
Configuration: Single or Multi-axis (3-axis systems include brackets)
Actuation: Ball or Lead Screw
Standard Motor: Nema 23
Standard Coupler: Servo class

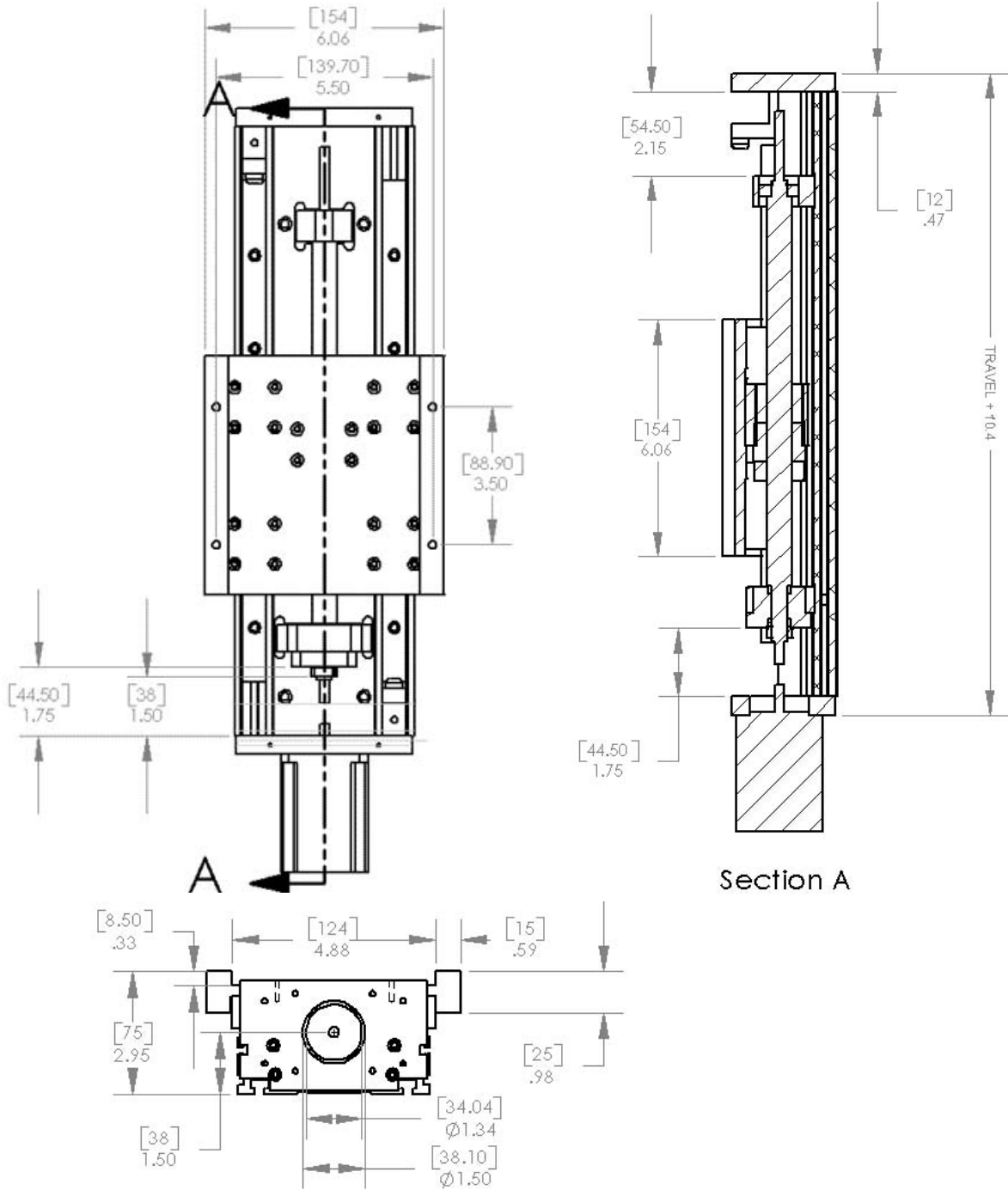
** Custom options available upon request. **



All dimensions in inches [mm]



XLA Technical Drawings



The XLA
ALL-in-ONE
SYSTEM

XLA15 - T48 BS _ .100 - C

Part ID

Travel in Inches

Travel XX

Screw Type

BS = Ball Screw

LS = Lead Screw

Unit of Measure (Screw Lead)

Blank = Inches

M = Metric

Screw Lead

Specify

e.g.: .100= .1" Lead

M 010= 10mm Lead

Options

C = Cover (Alum.)

LSx=Limit Switch (x = # of Switches)

BC= Bellows

HS= Home Switch

LM Guide Specification	
Type	XLA-15-LS
Dyn. Load Rating C lbf [kN]	1933.4 [8.6]
Stat. Load Rating C ₀ lbf [kN]	3192.3 [14.2]

Bearing Specification	
Dyn. Load Rating C lbf [N]	586.4 [2608.6]
Stat. Load Rating C ₀ lbf [N]	1212.5 [5393.7]

Repeatability	+/- .0001 mm
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Static Permissible Moment		
Ma	lbf.ft [Nm]	1478 [2004]
Mb	lbf.ft [Nm]	1571 [2130]
Mc	lbf.ft [Nm]	1485.5 [2014]

Geometrical Moment of Inertia		
I _x	in ⁴ [mm ⁴]	.49 [2.04 * 10 ⁻⁵]
I _y	in ⁴ [mm ⁴]	6.66 [2.8 * 10 ⁻⁶]
Mass	lb/ ft [kg/m]	3.45 [5.1]

Ball Screw Specification		
Outer Diam. of Screw in [mm]	0.625 [16]	
Lead	in [mm]	.197 [5] .394 [10]
Dyn. Load Rating C	lbf [N]	1719.6 [7649.2] 1829.84 [8139.52]
Stat. Load Rating C ₀	lbf [N]	3946.3 [17553.9] 2753.6 [12248.5]
Accuracy	C 10	
Axial Clearance	P0	

Lead Screw Specification		
Outer Diam. of Screw	in [mm]	.625 [16]
Lead	in [mm]	.1 [2.54] .2 [5.08]
Dyn. Load Rating C*	lbf [N]	250 [1112.06] ¹
Accuracy	in/in	.0006
Axial Clearance	Pre-loaded	

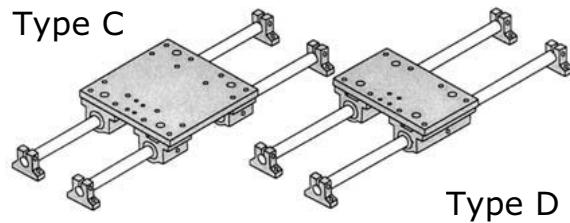
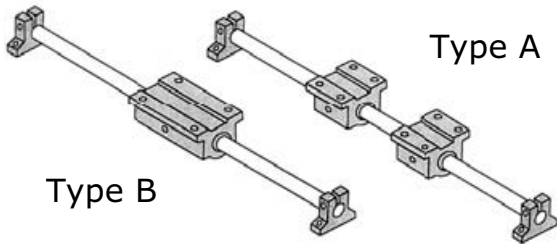
¹Based on 200 million inches of travel uncoated, TFE coating available to increase life to 300 million inches

Linear Motion Systems

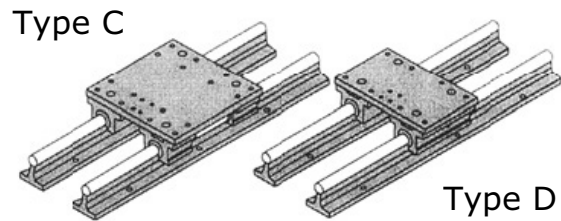
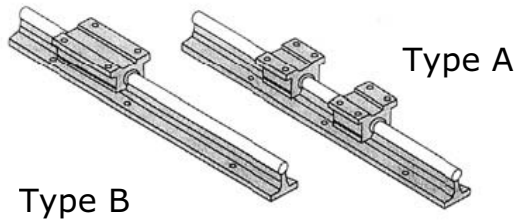


Pre-made Linear Motion Stages ready to drop into your next application.

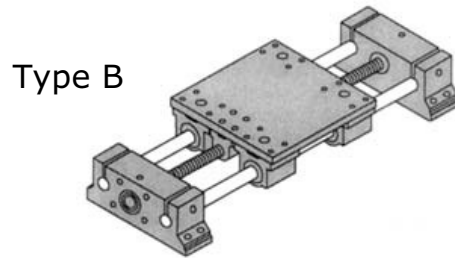
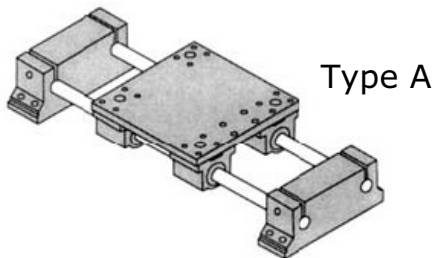
Stage 1—End Supported System



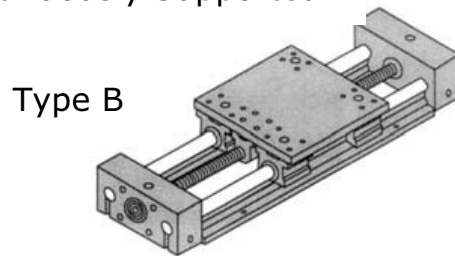
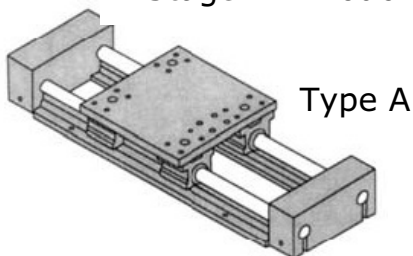
Stage 2—Continuously Supported Systems



Stage 3 —Double End Supported Systems



Stage 4 —Double Continuously Supported

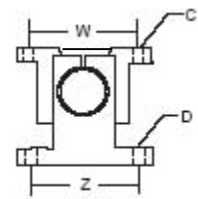
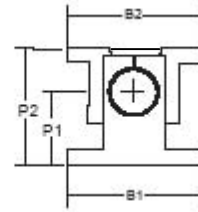
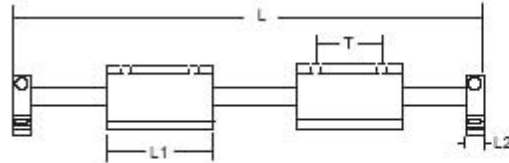
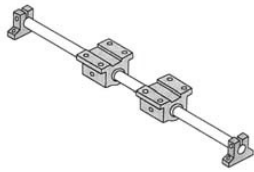




LINEAR MOTION STAGES

STAGE 1 TYPE A & B - END SUPPORTED SYSTEM

Type A / Single Pillow Blocks



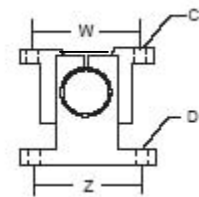
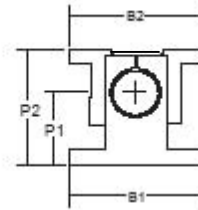
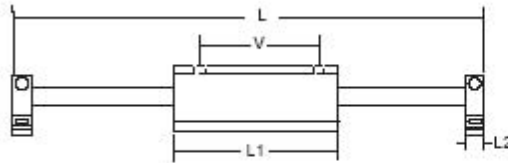
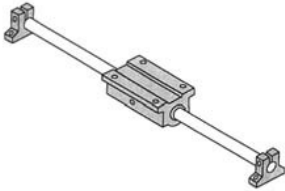
Unit: inch

Part No.	Dia.	(lbs.) Max. Load *	L	L1	L2	B1	B2	P1	P2	W	T	Z	C Thru Hole / Bolt Size	D Thru Hole / Bolt Size
1A-04	0.250	120	See Below	1.19	0.50	1.50	1.63	0.688	1.125	1.312	0.750	1.12	0.156 / #6	0.156 / #6
1A-06	0.375	190		1.31	0.56	1.63	1.75	0.750	1.250	1.437	0.875	1.25	0.156 / #6	0.156 / #6
1A-08	0.500	460		1.69	0.63	2.00	2.00	1.000	1.687	1.688	1.000	1.50	0.156 / #6	0.188 / #8
1A-10	0.625	800		1.94	0.69	2.50	2.50	1.000	1.875	2.125	1.125	1.88	0.188 / #8	0.218 / #10
1A-12	0.750	940		2.06	0.75	2.50	2.75	1.250	2.187	2.375	1.250	2.00	0.188 / #8	0.218 / #10
1A-16	1.000	1700		2.81	1.00	3.06	3.25	1.500	2.687	2.875	2.875	1.750	2.50	0.219 / #10

* Based on a travel of 2 million inches.

System Type	Standard System Lengths (L)						
Stage 1 - A	12"	18"	24"	30"	36"	42"	48"

Type B / Double Wide Pillow Blocks



Unit: inch

Part No.	Dia.	(lbs.) Max. Load *	L	L1	L2	B1	B2	P1	P2	W	V	Z	C Thru Hole Bolt Size	D Thru Hole Bolt Size
1B-04	0.250	96	See Below	2.50	0.50	1.50	1.630	0.688	1.125	1.312	2.000	1.12	0.156 / #6	0.156 / #6
1B-06	0.375	150		2.75	0.56	1.63	1.750	0.750	1.250	1.437	2.250	1.25	0.156 / #6	0.156 / #6
1B-08	0.500	370		3.50	0.63	2.00	2.000	1.000	1.687	1.688	2.500	1.50	0.156 / #6	0.188 / #8
1B-10	0.625	640		4.00	0.69	2.50	2.500	1.000	1.875	2.125	3.000	1.88	0.188 / #8	0.218 / #10
1B-12	0.750	750		4.50	0.75	2.50	2.750	1.250	2.187	2.375	3.500	2.00	0.188 / #8	0.218 / #10
1B-16	1.000	1360		6.00	1.00	3.06	3.250	1.500	2.687	2.875	4.500	2.50	0.219 / #10	0.281 / 1/4

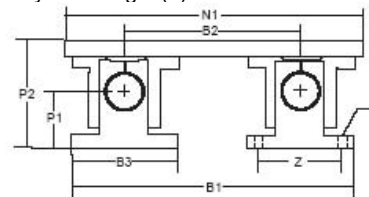
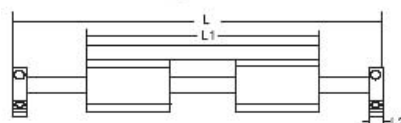
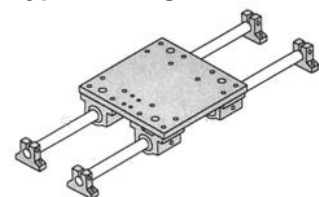
* Based on a travel of 2 million inches.

Travel length is calculated by subtracting the pillow block length (L1) and both the end support block length (L2) from the total system length (L).

System Type	Standard System Lengths (L)						
Stage 1 - B	12"	18"	24"	30"	36"	42"	48"

STAGE 1 TYPE C & D - END SUPPORTED SYSTEM

Type C / Single Pillow Blocks



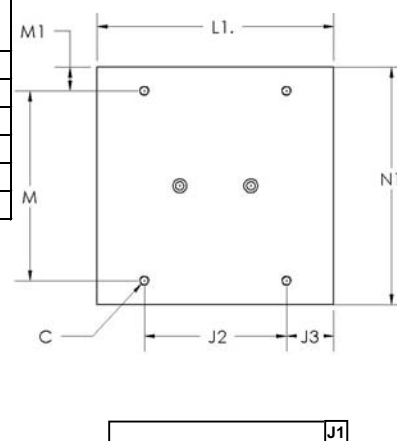
Travel length is calculated by subtracting the carriage length (L1) and both the end support block length (L2) from the total system length (L).

Unit: inch

Part No.	Dia.	(lbs.) Max. Load *	L	L1	L2	B1	B2	B3	N1	P1	P2	Z	D Thru Hole / Bolt Size
1C-04	0.250	240	See Below	4.00	0.50	3.75	2.25	1.50	4.00	0.688	1.375	1.12	0.156 / #6
1C-06	0.375	300		4.50	0.56	4.13	2.50	1.63	4.50	0.750	1.500	1.25	0.156 / #6
1C-08	0.500	920		5.50	0.63	5.25	3.25	2.00	5.50	1.000	2.063	1.50	0.188 / #8
1C-10	0.625	1600		6.50	0.69	6.25	3.75	2.50	6.50	1.000	2.250	1.88	0.218 / #10
1C-12	0.750	1880		7.50	0.75	7.00	4.50	2.50	7.50	1.250	2.688	2.00	0.218 / #10
1C-16 *	1.000	3400		9.00	1.00	8.56	5.50	3.06	9.00	1.500	3.188	2.50	0.281 / 1/4

* Based on a travel of 2 million inches

System Type	Standard System Lengths (L)						
Stage 1 - C	12"	18"	24"	30"	36"	42"	48"

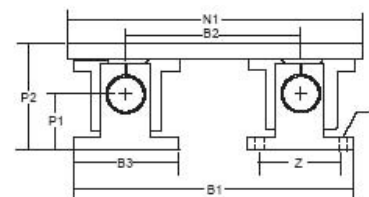
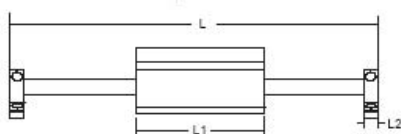
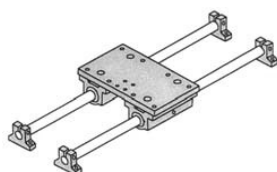


Stage 1 Type C Carriage Dimensions

Unit: inch

Part No.	Dia.	M	M1	J1	C	J2	J3	L1	N1
1C-04	0.250	2.25	0.88	0.25	#8-32	3.50	0.25	4.00	4.00
1C-06	0.375	2.50	1.00	0.25	#10-32	3.75	0.38	4.50	4.50
1C-08	0.500	3.25	1.13	0.37	1/4-20	4.50	0.50	5.50	5.50
1C-10	0.625	3.75	1.38	0.37	1/4-20	5.25	0.63	6.50	6.50
1C-12	0.750	4.50	1.50	0.50	5/16-18	6.00	0.75	7.50	7.50
1C-16	1.000	5.50	1.75	0.50	3/8-16	7.00	1.00	9.00	9.00

Type D / Double Wide Pillow Blocks



Part No.	Dia.	(lbs.) Max. Load *	L	L1	L2	B1	B2	B3	N1	P1	P2	Z	D Thru Hole/Bolt / Size
1D-04	0.250	192	See Below	2.50	0.50	3.75	2.25	1.50	4.00	0.688	1.375	1.12	0.156 / #6
1D-06	0.375	300		2.75	0.56	4.13	2.50	1.63	4.50	0.750	1.500	1.25	0.156 / #6
1D-08	0.500	740		3.50	0.63	5.25	3.25	2.00	5.50	1.000	2.063	1.50	0.188 / #8
1D-10	0.625	1280		4.00	0.69	6.25	3.75	2.50	6.50	1.000	2.250	1.88	0.218 / #8
1D-12	0.750	1500		4.50	0.75	7.00	4.50	2.50	7.50	1.250	2.688	2.00	0.218 / #8
1D-16	1.000	2720		6.00	1.00	8.56	5.50	3.06	9.00	1.500	3.188	2.50	0.281 / 1/4

*Based on a travel of 2 million inches.

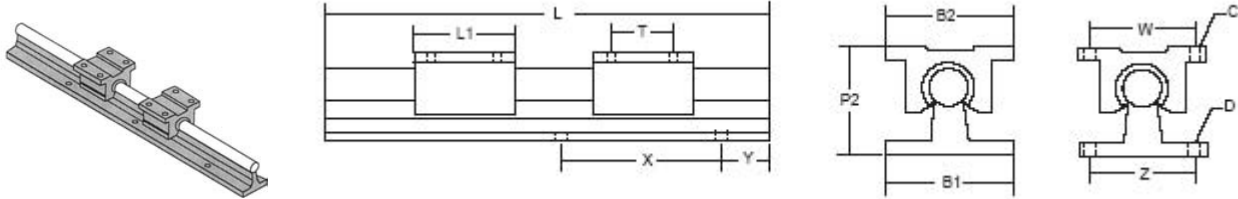
Stage 1 Type D Carriage Dimensions

Unit: inch

Part No.	Dia.	M	M1	J1	C	J2	J3	L1	N1
1D-04	0.250	2.25	0.88	0.25	#8-32	2.00	0.25	2.50	4.00
1D-06	0.375	2.50	1.00	0.25	#10-32	2.00	0.38	2.75	4.50
1D-08	0.500	3.25	1.13	0.37	1/4-20	2.50	0.50	3.50	5.50
1D-10	0.625	3.75	1.38	0.37	1/4-20	3.00	0.50	4.00	6.50
1D-12	0.750	4.50	1.50	0.50	5/16-18	3.50	0.50	4.50	7.50
1D-16	1.000	5.50	1.75	0.50	3/8-16	4.50	0.75	6.00	9.00

System Type	Standard System Lengths (L)						
Stage 1 - D	12"	18"	24"	30"	36"	42"	48"

Type A / Single Pillow Blocks



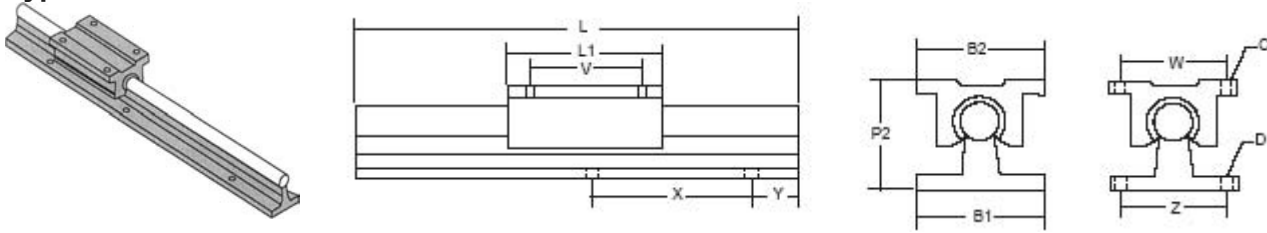
Unit: inch

Part No.	Dia.	(lbs.) Max. Load *	L	L1	B1	B2	P2	W	T	X	Y	Z	C Thru Hole / Bolt Size	D Thru Hole / Bolt Size
2A-08	0.500	460	See Below	1.50	1.50	2.00	1.812	1.688	1.00	4.00	2.00	1.000	0.156 / #6	0.169 / #6
2A-10	0.625	800		1.75	1.63	2.50	2.000	2.125	1.13	4.00	2.00	1.125	0.188 / #8	0.193 / #8
2A-12	0.750	940		1.88	1.75	2.75	2.437	2.375	1.25	6.00	3.00	1.250	0.188 / #8	0.221 / #10
2A-16	1.000	1700		2.63	2.13	3.25	2.937	2.875	1.75	6.00	3.00	1.500	0.219 / #10	0.281 / 1/4

* Based on a travel of 2 million inches.

System Type	Standard System Lengths (L)							
Stage 2 - A	12"	18"	24"	30"	36"	42"	48"	

Type B / Double Wide Pillow Blocks



Unit: inch

Part No.	Dia.	(lbs.) Max. Load *	L	L1	B1	B2	P2	W	V	X	Y	Z	C Thru Hole / Bolt Size	D Thru Hole / Bolt Size
2B-08	0.500	370	See Below	3.50	1.50	2.00	1.812	1.688	2.50	4.00	2.00	1.000	0.156 / #6	0.169 / #6
2B-10	0.625	640		4.00	1.63	2.50	2.000	2.125	3.00	4.00	2.00	1.125	0.188 / #8	0.193 / #8
2B-12	0.750	750		4.50	1.75	2.75	2.437	2.375	3.50	6.00	3.00	1.250	0.188 / #8	0.221 / #10
2B-16	1.000	1360		6.00	2.13	3.25	2.937	2.875	4.50	6.00	3.00	1.500	0.219 / #10	0.281 / 1/4

* Based on a travel of 2 million inches.

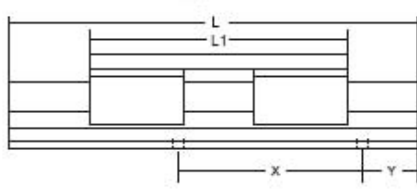
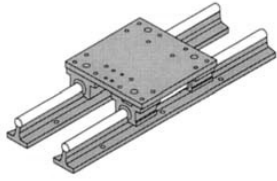
System Type	Standard System Lengths (L)							
Stage 2 - B	12"	18"	24"	30"	36"	42"	48"	

Travel length is calculated by subtracting the pillow block length (L1) from the total system length (L).

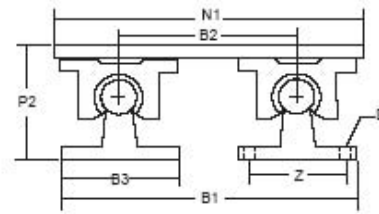
LINEAR MOTION STAGES



SYSTEM Type C / Single Pillow Blocks



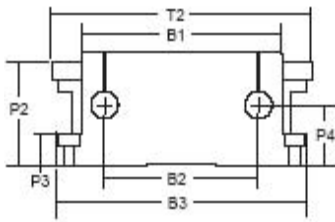
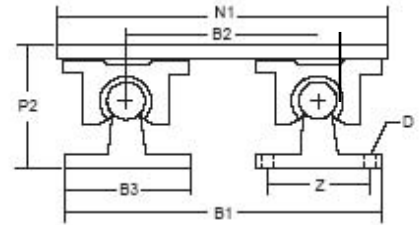
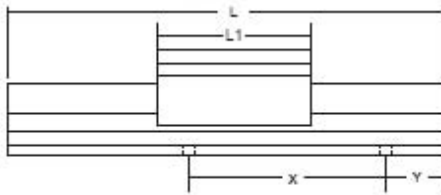
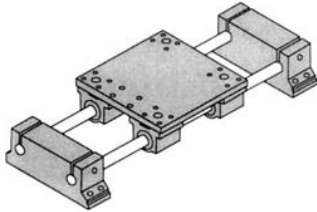
Travel length is calculated by subtracting the carriage length (L1) and both the end support block length (L2) from the total system length (L).



Unit: inch

Part No.	Dia.	(lbs.) Max. Load *	L	L1	B1	B2	B3	N1	P2	X	Y	Z	D
----------	------	-----------------------	---	----	----	----	----	----	----	---	---	---	---

Type A / Single Pillow Blocks



Unit: inch

Travel	Overall System Length (L)			
	3A-08	3A-10	3A-12	3A-16
6	13.5	14.5	16.1	17.6
12	19.5	20.5	22.1	23.6
18	25.5	26.5	28.1	29.6
24	31.5	32.5	34.1	35.6
30	37.5	38.5	40.1	41.6
36	43.5	44.5	46.1	47.6
42	49.5	50.5	52.1	53.6

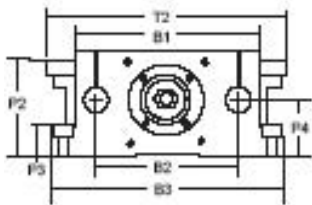
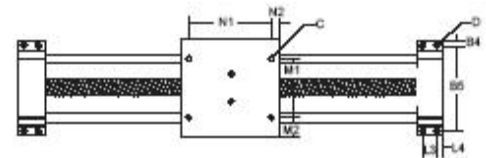
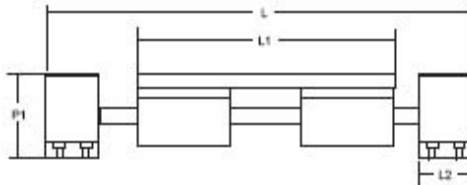
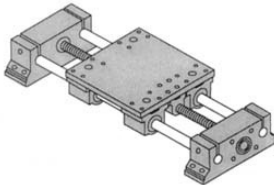
Unit: inch

Part No.	Dia.	Max Load* (lbs.)	L	L1	L2	L3	L4	B1	B2	B3	B4	B5	M1	M2	N1	N2	P1	P2	P3	P4	T2	C	D	
																							Bolt	Hole
3A-08	0.500	920	See Below	5.50	1.00	0.56	0.22	4.25	3.25	5.30	0.25	4.80	3.25	1.125	4.50	0.50	2.38	2.187	0.50	1.125	5.50	1/4-20	#8	0.19
3A-10	0.625	1600		6.50	1.00	0.56	0.22	5.00	3.75	6.25	0.25	5.75	3.75	1.375	5.25	0.63	2.38	2.375	0.60	1.313	6.50	1/4-20	#8	0.19
3A-12	0.750	1880		7.50	1.30	0.80	0.25	6.00	4.50	7.20	0.25	6.70	4.50	1.500	6.00	0.75	2.75	2.937	0.75	1.500	7.50	5/16-18	#10	0.22
3A-16	1.000	3400		9.00	1.30	0.74	0.28	7.25	5.50	8.70	0.35	8.00	5.50	1.750	7.00	1.00	3.37	3.437	0.75	1.750	9.00	3/8-16	1/4	0.28

* Based on a travel of 2 million inches.

STAGE 3 TYPE B - END SUPPORTED SYSTEM WITH BALL SCREW

Type B / Single Pillow Blocks



Unit: Inch

Travel	Overall System Length (L)			
	3B-08	3B-10	3B-12	3B-16
6	13.5	14.5	16.1	17.6
12	19.5	20.5	22.1	23.6
18	25.5	26.5	28.1	29.6
24	31.5	32.5	34.1	35.6
30	37.5	38.5	40.1	41.6
36	43.5	44.5	46.1	47.6
42	49.5	50.5	52.1	53.6

Various ball screw & lead screw options available. Please specify screw lead when ordering or call SMI for available options.

Unit: inch

Part No.	Dia.	Max Load* (lbs.)	L	L1	L2	L3	L4	B1	B2	B3	B4	B5	M1	M2	N1	N2	P1	P2	P3	P4	T2	C	D	
																							Bolt	Hole
3B-08	0.500	920	See Below	5.50	1.00	0.56	0.22	4.25	3.25	5.30	0.25	4.80	3.25	1.125	4.50	0.50	2.38	2.187	0.50	1.125	5.50	1/4-20	#8	0.19
3B-10	0.625	1600		6.50	1.00	0.56	0.22	5.00	3.75	6.25	0.25	5.75	3.75	1.375	5.25	0.63	2.38	2.375	0.60	1.313	6.50	1/4-20	#8	0.19
3B-12	0.750	1880		7.50	1.30	0.80	0.25	6.00	4.50	7.20	0.25	6.70	4.50	1.500	6.00	0.75	2.75	2.937	0.75	1.500	7.50	5/16-18	#10	0.22
3B-16	1.000	3400		9.00	1.30	0.74	0.28	7.25	5.50	8.70	0.35	8.00	5.50	1.750	7.00	1.00	3.37	3.437	0.75	1.750	9.00	3/8-16	1/4	0.28

* Based on a travel of 2 million inches.



SIMPLE SLIDE SYSTEMS

Simple Slide Linear Motion Systems SS Series

precision ground hardened linear shafting with recirculating ball bushings.

- **Long travel length** using single base precision machined to within .002" per foot, can be joined for unlimited travel.
- **Low maintenance cost** with easily replaceable components.
- **Very low friction** at .003 typical.
- Complete with carriage plate standard.
- Quick delivery, ready to install.



SIMPLE SLIDE CONSTRUCTION

The top and base are constructed of a 6061T6 aluminum alloy and are protected with a clear anodized surface finish. The mounting surface is precision machined to assure flatness. The linear shafting is uniformly case hardened and produced to exceed industrial standards. Also utilized in the Simple Slide is our linear motion pillow block, with a self-aligning bushing with seals. These pillow blocks offer three times the load capacity, or 27 times the normal life of a pillow block using a conventional ball bushing.

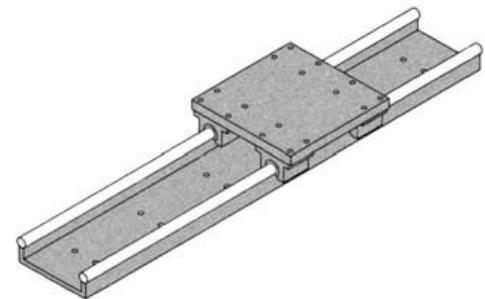
SIMPLE SLIDE OPTIONS

- Custom Carriage Tops
- Specific Mounting Dimensions
- Stainless Steel Shafting
- Custom Pillow Blocks including 300 series Stainless Steel
- Locking Pillow Block Option
- Plain Bushing Pillow Blocks
- Call factory for off-the-shelf systems and other options

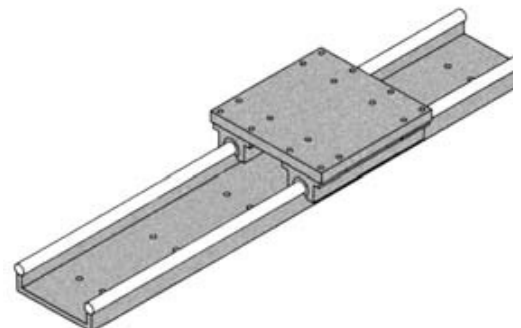
Part Number System

SS A 08 C - L48

Part ID	SS	A	08	C	- L48
SS Simple Slide					
Type Designation		A or B			
Shaft Diameter			XX		
XX: See Below			1/2" = 08		
			5/8" = 10		
			3/4" = 12		
			1" = 16		
Shaft Material				C	
C: C1060					
SS: 440C					
System Length					Lxx
Lxx: Specify length in inches					



Type A - Single Pillow Blocks

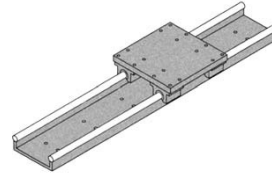
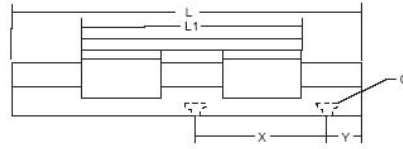
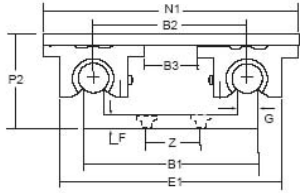


SIMPLE SLIDE SYSTEMS



SSA - Single Pillow Block (Type A)

Travel length is calculated by subtracting the carriage plate length (L1) from the total system length (L).



Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	B1	B2	B3	E1	X	Y	Z	C Thru Hole / Bolt Size	F	G	N1	P2
SSA-08	0.500	920	See Below	4.50	2.56	2.31	0.31	3.69	4.00	2.00**	0.75	0.28 / 1/4	0.25	0.25	4.50	2.00
SSA-10	0.625	1600		5.25	3.00	2.68	0.25	4.44	4.00	2.00**	0.88	0.28 / 1/4	0.37	0.37	5.25	2.25
SSA-12	0.750	1880		6.00	3.63	3.25	0.50	5.13	6.00	3.00	1.00	0.34 / 5/16	0.37	0.37	6.00	2.50
SSA-16	1.000	3400		7.50	5.00	4.50	1.25	6.90	6.00	3.00	1.25	0.41 / 3/8	0.47	0.47	7.75	3.00

* Based on a travel of 2 million inches & bearing capacity. ** For 18", 30" and 42" system lengths subtract 1" of "Y" dimension.

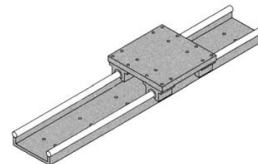
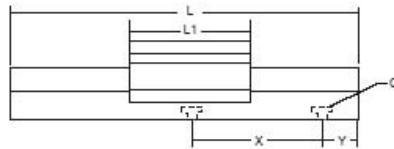
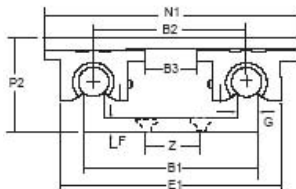
System Type	Standard System Lengths (L)						
	12	18	24	30	36	42	48
SSA	12	18	24	30	36	42	48
	Travel						
SSA-08	7.5	13.5	19.5	25.5	31.5	37.5	43.5
SSA-10	6.8	12.8	18.8	24.8	30.8	36.8	42.8
SSA-12	6.0	12.0	18.0	24.0	30.0	36.0	42.0
SSA-16	4.5	10.5	16.5	22.5	28.5	34.5	40.5

Simple Slide Type A Carriage Dimensions

Part No.	Dia.	C	L1	M	M1	J1	J2	J3	N1
SSA-08	0.500	1/4-20	4.50	2.50	1.00	0.37	3.00	0.75	4.50
SSA-10	0.625	1/4-20	5.25	2.75	1.25	0.37	3.50	0.88	5.25
SSA-12	0.750	5/16-18	6.00	3.25	1.38	0.50	4.00	1.00	6.00
SSA-16	1.000	3/8-16	7.50	4.50	1.63	0.50	5.00	1.25	7.75

SSB - Double Pillow Block (Type B)

Travel length is calculated by subtracting the carriage plate length (L1) from the total system length (L).



Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	B1	B2	B3	E1	X	Y	Z	C Thru Hole / Bolt Size	F	G	N1	P2
SSB-08	0.500	740	See Below	3.50	2.56	2.31	0.31	3.69	4.00	2.00**	0.75	0.28 / 1/4	0.25	0.25	4.50	2.00
SSB-10	0.625	1280		4.00	3.00	2.68	0.25	4.44	4.00	2.00**	0.88	0.28 / 1/4	0.37	0.37	5.25	2.25
SSB-12	0.750	1500		4.50	3.63	3.25	0.50	5.13	6.00	3.00	1.00	0.34 / 5/16	0.37	0.37	6.00	2.50
SSB-16	1.000	2720		6.00	5.00	4.50	1.25	6.90	6.00	3.00	1.25	0.41 / 3/8	0.47	0.47	7.75	3.00

* Based on a travel of 2 million inches & bearing capacity. ** For 18", 30" and 42" system lengths subtract 1" of "Y" dimension

System Type	Standard System Lengths (L)						
	12	18	24	30	36	42	48
SSB	12	18	24	30	36	42	48
	Travel						
SSB-08	8.5	14.5	20.5	26.5	32.5	38.5	44.5
SSB-10	8.0	14.0	20.0	26.0	32.0	38.0	44.0
SSB-12	7.5	13.5	19.5	25.5	31.5	37.5	43.5
SSB-16	6.0	12.0	18.0	24.0	30.0	36.0	42.0

Simple Slide Type B Carriage Dimensions

Part No.	Dia.	C	L1	M	M1	J1	J2	J3	N1
SSB-08	0.500	1/4-20	3.50	2.50	1.00	0.37	2.00	0.75	4.50
SSB-10	0.625	1/4-20	4.00	2.75	1.25	0.37	2.50	0.75	5.25

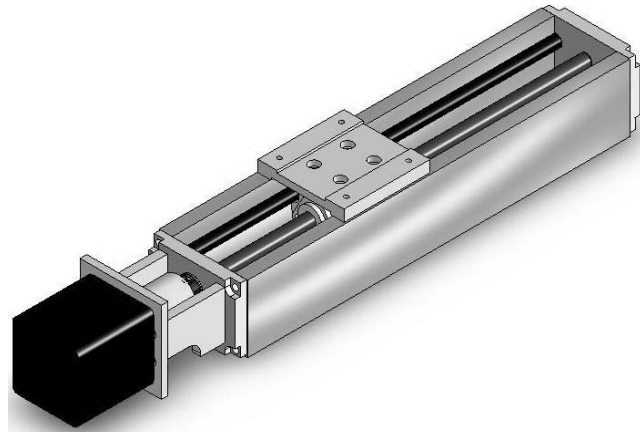
Eco Stage

Need an accurate positioning device, but don't want to pay for the "to-the-micron" accuracy of high-cost systems?

Choose the Eco Stage!

4" TO 18" TRAVEL STANDARD

LOW COST
QUICK DELIVERY



HIGH CAPACITY
LIGHT WEIGHT

LOW COEFFICIENT OF FRICTION

SMI's new ECO Stage is designed to be an efficient, economical, off the shelf linear solution. SMI has incorporated all of the latest innovations from our industry into our product to increase capacity, extend life, slide freely and reduce maintenance while being cost effective and ECONOMICAL.

Bushings are Teflon coated allowing for high vertical loads. Shafting is an aluminum shaft encased in a thin ceramic coating that is accurately machined into our extruded base. This combination of Teflon and ceramics gives a unique low friction-sliding element while reducing cost significantly. These elements require no lubrication and in most applications are considered maintenance free.

Standard Features

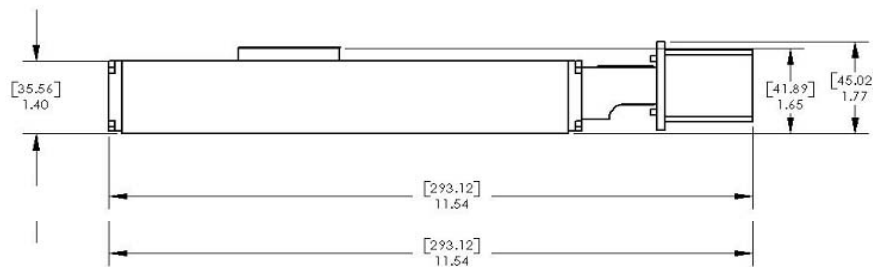
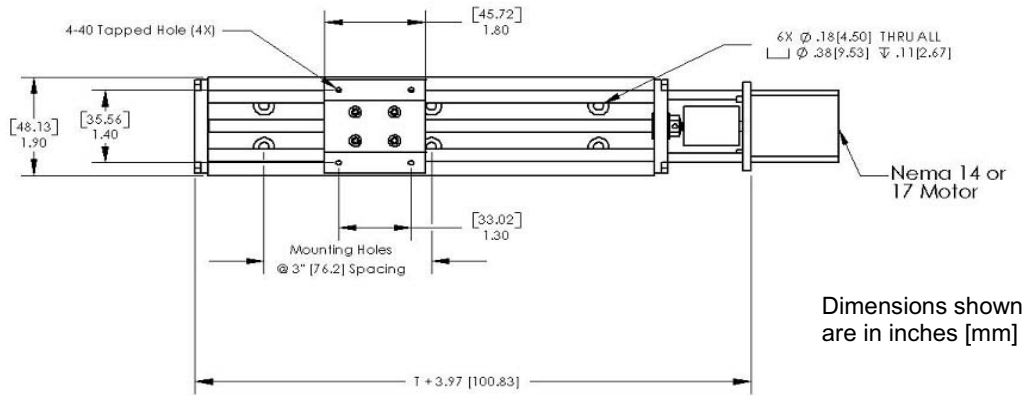
- 4" to 18" Travel lengths
- Teflon Slide Bushings
- Ceramic Coated Shafting
- Aluminum Body and Carriage
- Leadscrew Driven
- NEMA Motor Mount (14 or 17)
- Servo Class Coupler

Slide Bearing General Properties	
Max Moisture Absorption (73°F)	.3 % weight
Max. Moisture Absorption	1.30% weight
Coefficient of sliding friction, against steel	0.08-0.18
Max. Surface Speed	1969 fpm
Modulus of Elasticity	348,000 psi
Tensile Strength (68°F)	10,585 psi
Compressive Strength	8700 psi
Max. Long-term Temp.	194°F
Max. Short-Term Temp.	248°F
Min. Application Temp.	-58°F
Electrical Surface Resistance	>10 ¹²

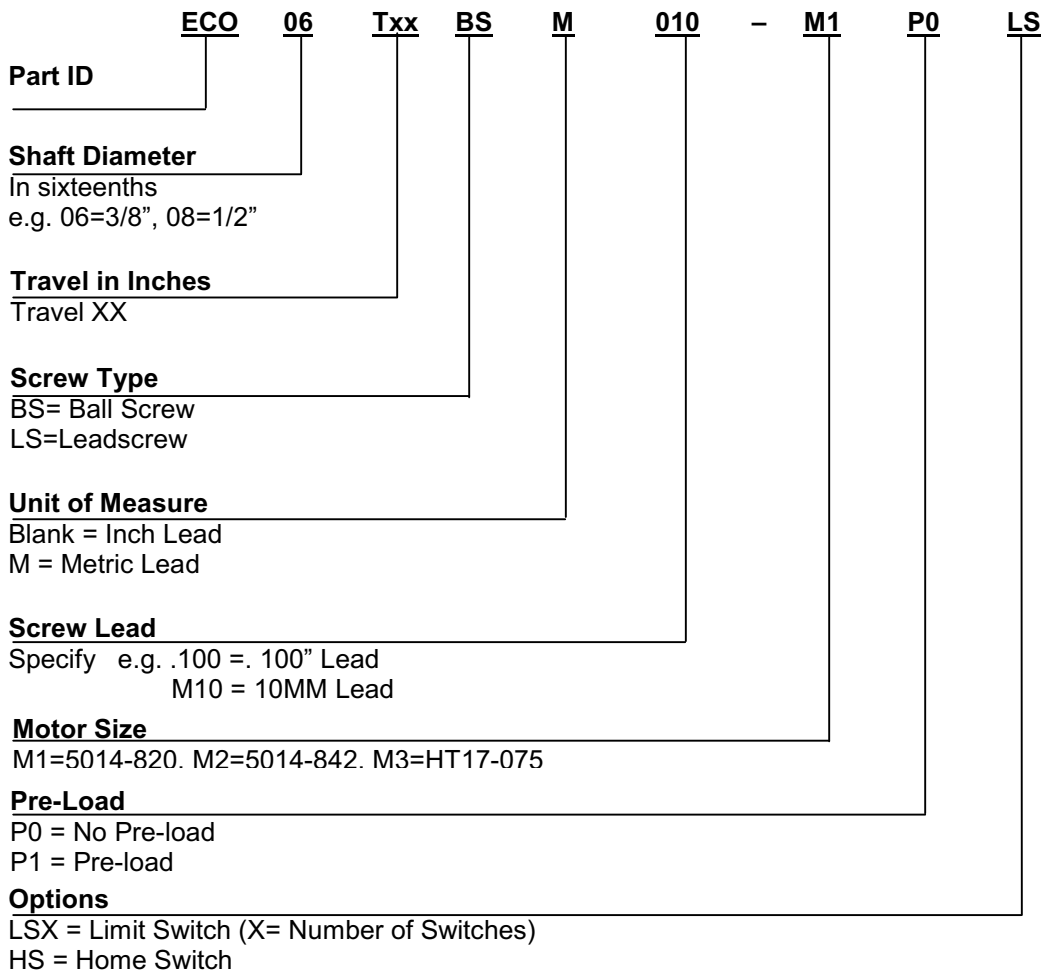
Available Options

- Custom Carriage Design
- Specific Leadscrew diameter or Pitch
- Ball Screw Drive
- Limit/home Switch (s)
- Motor, Control, power supply, software
- Custom Colors

Eco Stage Dimensions



Part Number System

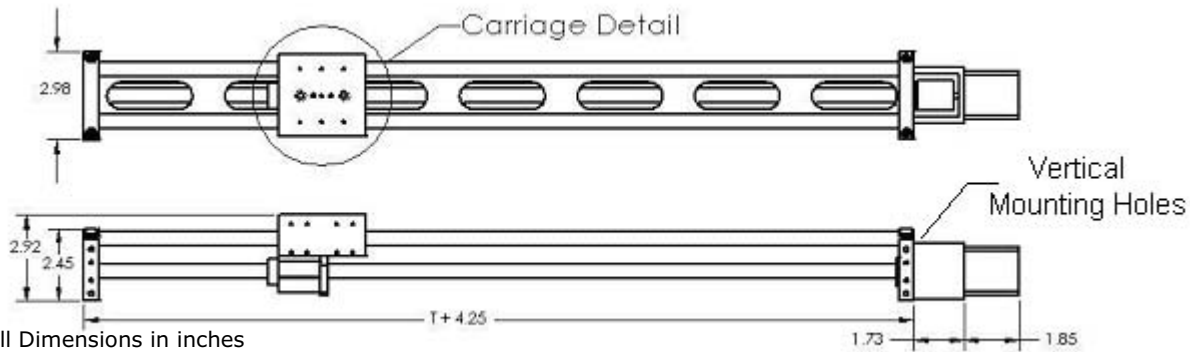
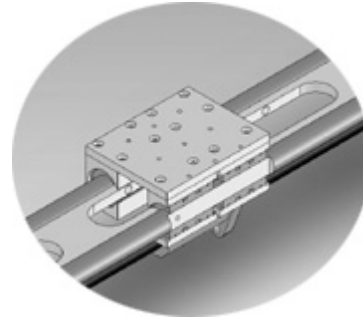
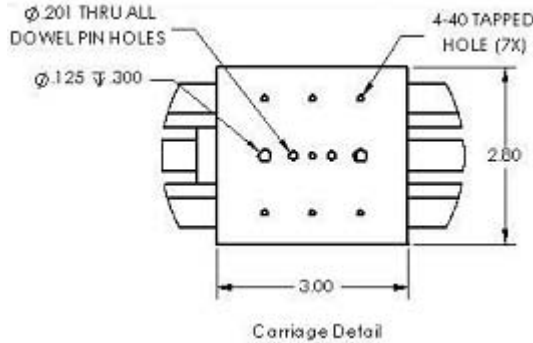


Twin Lite

Light in weight, heavy on capacity

Available in Single, Multi-Axis and Gantry configurations.

- Extreme light weight construction
- Excellent for wash down applications
- Non-Magnetic
- Chemical resistant
- Self lubricating
- Mount in Vertical or Horizontal plane
- Quick Delivery in lengths up to 48"



Bearing Specs

General Properties	
Max Moisture Absorption (73°F)	.3 % weight
Max. Moisture Absorption	1.30% weight
Coefficient of sliding friction, against steel	0.08-0.18
Max. Surface Speed	1969 fpm
Modulus of Elasticity	348,000 psi
Tensile Strength (68°F)	10,585 psi
Compressive Strength	8700 psi
Max. Long-term Temp.	194°F
Max. Short-Term Temp.	248°F
Min. Application Temp.	-58°F
Electrical Surface Resistance	>10 ¹² Ω

Benefits of linear bearings:

- Vibration Dampening
- Dirt-Resistant
- Self Lubricating
- Maintenance Free

Perfect for:

- extremely "dirty" applications
- Underwater applications
- Wash- down conditions

Material is resistant to: Alcohol, Chlorinated hydrocarbons, Greases, oils, fuels, weak lye's, strong lye's, sea water

Conditionally Resistant to: Ketones, Weak Acids

Not Resistant to: Ester, Strong acids

Shafting Specs

- 6061-T6 Aluminum Base Material
- RC70 Ceramic Coated Finish
- Non-Magnetic and Vibration Resistant
- Weld Splatter, Paints, and Contaminants Will Not Stick

Twin Lite Specifications

Lead Screw Specs		
Outer Dia.	in [mm]	0.5 [127]
Lead	in [mm]	.200 [5.08] ¹
Dyn.Load Rating	lbf [N]	25 [11.2] ²
Drag Torque	oz-in [Nm]	.05-2 [.004-.01]

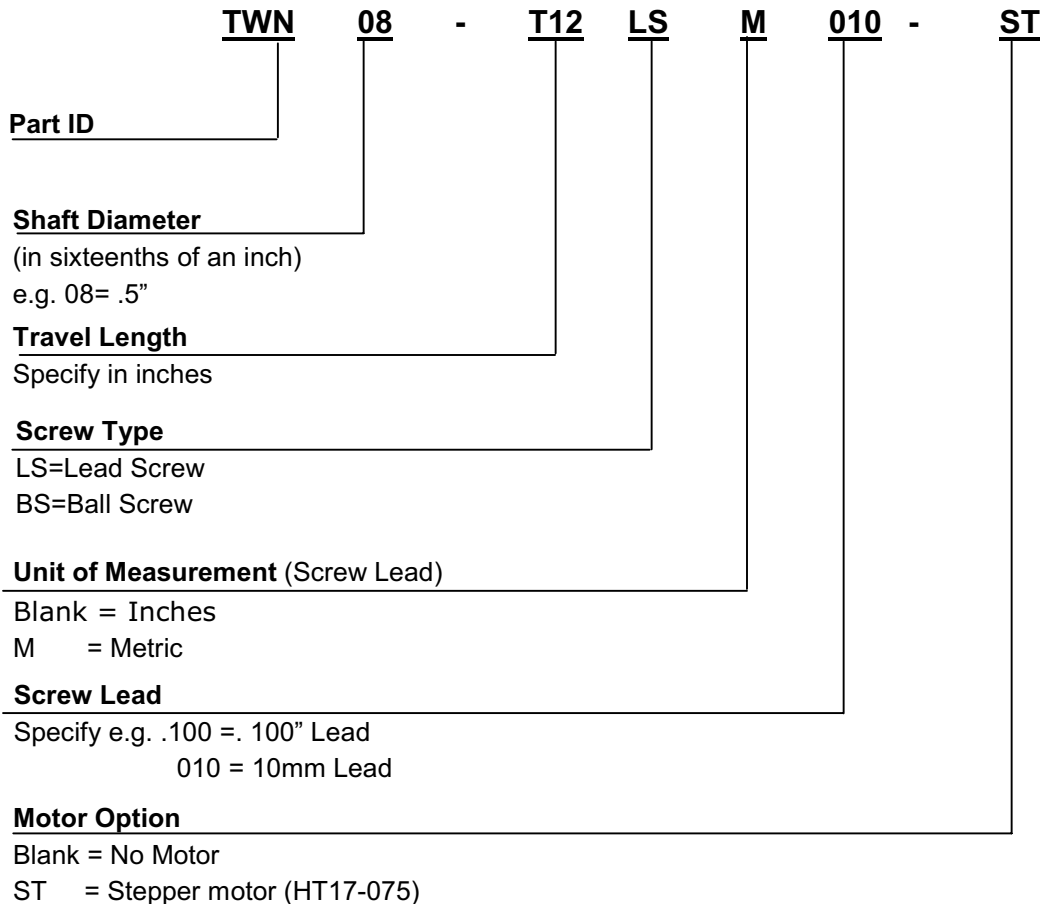
¹ Custom leads available on request ² Based on 200 million inches of travel uncoated.

TFE coating available to increase life to 300 million inches

General Specifications

- System lengths up to 48"
- Accuracy ± 0.002 "/ft.
- Flatness and Straightness within .002"/ft
- Repeatability of .002"/ft
- Anti-Backlash lead screw nut standard
- Servo class coupler standard
- Call for Custom Applications

Part Number System



MP SERIES

Our Miniature Precision Stage (MP) is small in size and big on performance.

Designed for precision, **small envelope**, **large capacities** and long term **reliability**. The MP system comes in three sizes - MP3, MP5 and MP7 with various travel lengths. The MP system incorporates square rail technology to provide high load capacity, precision and repeatability at an affordable cost.

The MP system's size and performance make it ideal for applications in inspection, vision, gauging or where existing stages and motors are simply too large.



All systems come with the following features as standard.

STANDARD FEATURES:

High Strength Aluminum Body

Constructed to provide a compact, high strength billet aluminum body that we protect with an anodized finish.

High Efficiency Ball Screw Drive

Our ball screw drive offers a high throughput, accurate and repeatable class C7 precision rolled screw with 90% efficiency.

Anti-Backlash Lead Screw Option

For excellent repeatability and cost considerations an anti-backlash lead screw option is available upon request.

Contact SMI for available diameters, leads, materials and anti-corrosive coatings.

Square Rail Sets

The MP System is equipped with carriage support bearings, which provide high load capacity, smooth precise motion and dependable performance. Ultra High Precision is available.

Fixed End Support Bearing

End support bearings, utilizing precision bearing technology, offer high capacity in a compact design. The fixed side housing unit, lock nut, and simple support side unit are assembled as a kit and designed especially for the MP Systems.

NEMA Motor

The MP system is equipped with either a NEMA motor size of 11, 14 or 17, depending on MP size selected. We carry a multitude of other motor sizes and performance levels, as well as controllers, indexers and power supplies.

Mounting Guides & Holes

Continuous slots along the side of the system provide a convenient means of mounting the system to a work surface as well as mounting accessories to the system. Carriage equipped with numerous drilled & tapped mounting holes with thread inserts for strength and mounting options.

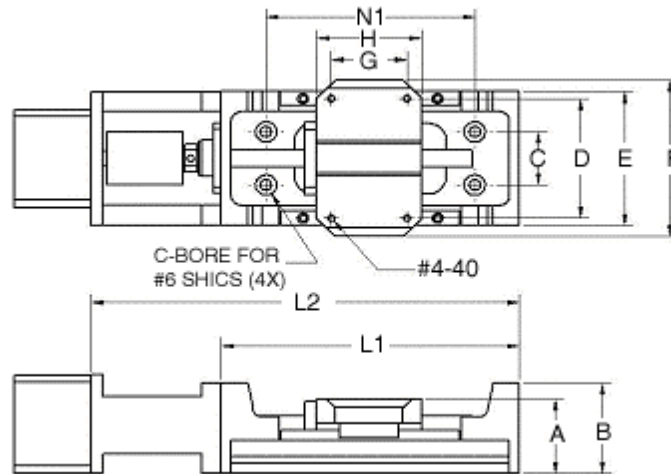
Motor Couplers

An integral part of our MP System is the servo class motor coupler for effective transmission of motor torque to the system drive screw.

MP Stages are stackable as XYZ configuration and adaptable to other SMI positioning products. Ask about SMI Brackets for Multi-Axis applications or special configurations.

SYSTEM OPTIONS:

- Stainless steel body
- Ground ball screw
- Lead screw
- Limit / home sensors
- Motor upgrade
- Custom motor mounts
- Controls Packages
- Specific mounting holes
- Ultra Precision grade linear guides
- Encoders
- Custom Top Carriage (s)
- Gear Reducer



MP3 SERIES

Unit: inch

Part No.	Dimensions											
	Travel	L1	L2	N1	A	B	C	D	E	F	G	H
MP3-1	1.000	3.640	5.360	2.750	0.960	1.000	0.750	1.400	1.518	1.750	1.000	1.250
MP3-2	2.000	4.640	6.360	3.750	0.960	1.000	0.750	1.400	1.518	1.750	1.000	1.250
MP3-3	3.000	5.640	7.360	4.750	0.960	1.000	0.750	1.400	1.518	1.750	1.000	1.250

MP5 SERIES

Unit: inch

Part No.	Dimensions											
	Travel	L1	L2	N1	A	B	C	D	E	F	G	H
MP5-1	1.00	3.930	5.650	2.750	1.050	1.280	0.750	1.678	1.880	2.200	1.000	1.380
MP5-2	2.00	4.930	6.650	3.750	1.050	1.280	0.750	1.678	1.880	2.200	1.000	1.380
MP5-3	3.00	5.930	7.650	4.750	1.050	1.280	0.750	1.678	1.880	2.200	1.000	1.380
MP5-4	4.00	6.930	8.650	5.750	1.050	1.280	0.750	1.678	1.880	2.200	1.000	1.380

MP7 SERIES

Unit: inch

Part No.	Dimensions											
	Travel	L1	L2	N1	A	B	C	D	E	F	G***	H
MP7-1	1.00	4.11	5.83	2.75	1.050	1.280	0.750	1.600	1.880	2.270	1.100	1.566
MP7-2	2.00	5.11	6.83	3.75	1.050	1.280	0.750	1.600	1.880	2.270	1.100	1.566
MP7-3	3.00	6.11	7.83	4.75	1.050	1.280	0.750	1.600	1.880	2.270	1.100	1.566
MP7-4	4.00	7.11	8.83	5.75	1.050	1.280	0.750	1.600	1.880	2.270	1.100	1.566
MP7-5	5.00	8.11	9.83	6.75	1.050	1.280	0.750	1.600	1.880	2.270	1.100	1.566
MP7-6	6.00	9.11	10.83	7.75	1.050	1.280	0.750	1.600	1.880	2.270	1.100	1.566
MP7-10	10.0	13.11	14.83	11.75	1.050	1.280	0.750	1.600	1.880	2.270	1.100	1.566

*** MP7 carriage has a 3rd mounting hole on centerline. (.550" apart)

MP DRIVE SPECIFICATIONS

The MP System comes standard with a precision rolled ball screw.

BALL SCREW SPECIFICATIONS

Contact SMI if special ball screw requirements are needed.

Dia.	Lead	Accuracy	Axial Clearance
6mm	1mm	C7	20 microns

C7: ±0.05 / 300mm

Anti-backlash lead screw options also available upon request.

MOTOR SPECIFICATIONS

See Page 22 for a list of standard motors or contact one of our knowledgeable engineers, they will be happy to assist you in choosing the best motor for your application. 800-283-3411 or email us at sales@smi4motion.com

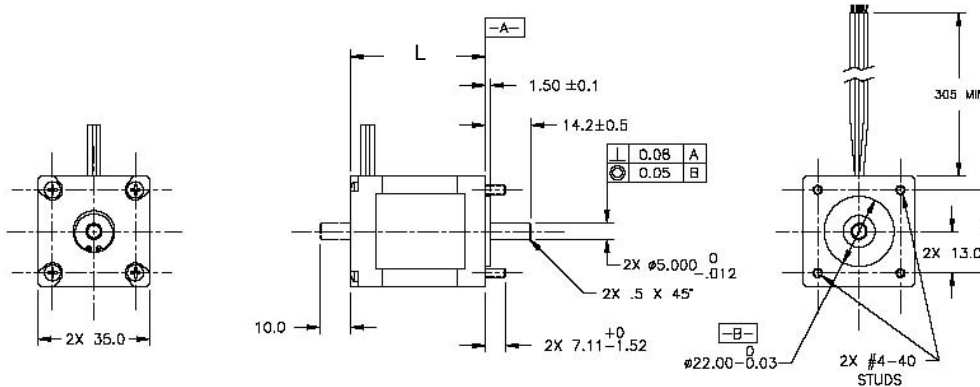


MP3 SERIES

Part No.	Dimensions										
	Travel	L1	L2	N1	A	B	C	D	E	F	G
MP3-1	1.00	3.64	5.36	2.75	0.980	1.000	1.000	1.518	1.750	1.000	1.250
MP3-2	2.00	4.64	6.36	3.75	0.980	1.000	1.000	1.518	1.750	1.000	1.250

Motor Specifications for SMI Systems

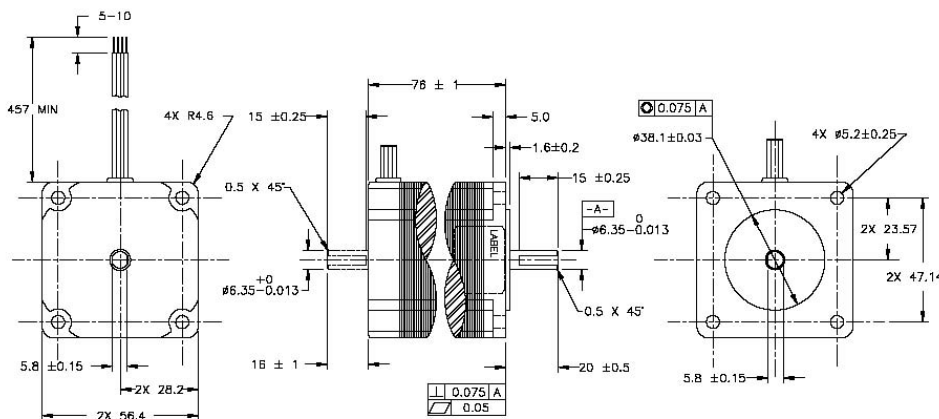
Part #	MOTOR CONNECTION 1=series 2=parallel 3=unipolar	Motor Length (inches)	Minimum Holding Torque (oz-in)	Leads	Step Angle	Volts	Amps	Ohms	mH	Rotor Inertia (oz-in ² /G-CM ²)	Motor Weight
5014-820	2	1	8	4	1.8	3.2	0.35	8.5	8	.51/9.3	0.33
5014-842	2	1.57	26	4	1.8	4.8	1	4.3	5.5	.109/20	0.47
HT23-401	1	2.99	264	8	1.8	4.2	2.12	2	6.4	2.62/480	2.2
	2	2.99	264	8	1.8	2.1	4.24	0.5	1.6	2.62/480	2.2
	3	2.99	187	8	1.8	3	3	1	1.6	2.62/481	2.2
HT17-075	1	1.85	62.8	8	1.8	5.7	0.85	6.6	12	.37/68.0	0.73
	2	1.85	62.8	8	1.8	2.8	1.7	1.7	3	.37/68.0	0.73
	3	1.85	44.4	8	1.8	4	1.2	3.3	3	.37/68.0	0.73



Part No.: 5014-820
Part No.: 5014-842

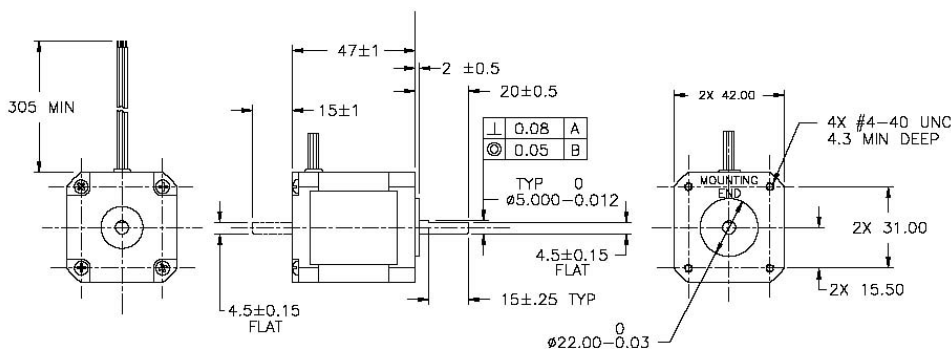
Both are standard for all MP Stages and the Economy Stage.

Please specify when placing your order.



Part No.: HT23-401

Standard motor for XLA Stage



Part No.: HT17-075

Standard motor for The Twin Lite Stage & Economy Stage

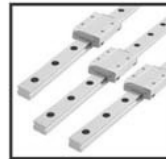
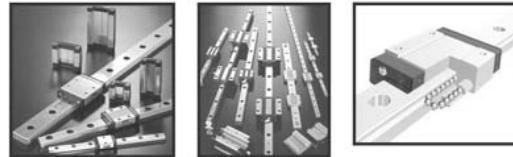


SMI was founded in 1990 in response to a rapidly growing need for a competent supplier of linear motion components and systems. For the first several years SMI focused all of its attention on becoming a **Master Distributor of linear motion components** in California and the West Coast offering Engineering and Applications assistance. During this time period, SMI developed a significant customer (OEM) base by supplying volume users with leading edge linear products from around the world. SMI was able to do this by offering factory pricing and volume discounts. Our large customers found SMI to be more competitive than rival direct pricing and offered customers the advantage of local stock and a deeper commitment to customer satisfaction and cooperation.

What truly makes SMI unique and a rapid growth company is the fact that SMI is able to secure authorized relationships with manufacturers who offer overlapping and complimentary products. **SMI is able to offer true consultative type assistance** without the need to fit every application into a single product source. SMI's approach has always been, **"let's fit every application with the right product, and not fit a single product into every application"**. In many cases, multiple sources are acceptable to an application with fit, form and functionality. Now both the Engineers and Purchasing are happy since they have multiple sources available at volume pricing from a single confident source that supports their needs.

- SMI has the ability to review an application from an engineering standpoint
- Offer creative solutions from a multitude of sources from around the world.
- Keep and maintain inventory for fast delivery
- Have a back up source waiting in the wings
- Offer factory direct volume pricing

Linear Guides: Profile Rails



- Large, Multi-line Selection
- Factory Direct Pricing
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- Value Added CNC Machining
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- Complete Systems Available

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- C0 to C10 Accuracy
- 0 to 50 micron Axial Play
- ISO 9001 Approved
- Stainless Steel Available
- Support Units Available
- Customs & End Machining Available



Contact SMI for your Free Quote & Catalog

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Our founder served his apprenticeship years in the Machine Tool world and quickly adapted those skills at SMI to offer a new value added service. What began with simple knee mill opportunities offering customers a value-added source quickly expanded into a fully capable CNC facility with Lathes, Vertical Machines and Grinders

SMI is extremely proficient in working with the intricacies of hardened materials used in raceway type products from round shaft to profile guide rails. Our shop operates in the Master Cam environment supported by Solid Works modeling and is ISO compatible.

In 1998 SMI began an assembly department for the creation of finished sub-assemblies.



Now, SMI is used as an Applications Solutions House, as a distributor for product selection, as a machine facility for modifications and now an assembly department to build completed sub-assemblies all supported by Engineering.

SMI can help you design **complete motion solutions**. This runs the spectrum from simple single axis stages to complex multi-axis robots. SMI is able to combine all of its resources and experiences to develop complete answers to your complex motion requirements.

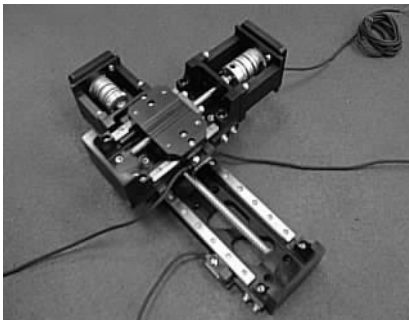
SMI has recently added a 10ft travel gantry system to our capable machine shop.

This system allows SMI to create extremely long and precise travel systems. A capability not many manufacturers can offer.

The products shown in this catalog are of an open architecture approach using the **“keep it simple”** philosophy. Some rival manufacturers of stages and systems have found ways of making their units excessively costly and inordinately complex for their needs. These units, even though aesthetically attractive, offer little in the way of engineering advantages.



SMI stages are logically uncomplicated, industrial tough and designed to serve one need: Yours



The following catalog is a compilation of popular linear stages and systems we have designed, built and developed based on market needs. **If you don't see it here, call us and ask. We enjoy a good challenge.**



"Specialist in Mechanical Motion"



SMI In-House Capabilities



• System Design Engineers

- Degreed engineers on staff to help select & develop system design
- Solid Works 3D CAD software
- Standard, modified off-the-shelf or custom system design
- Vast product knowledge from components to systems



• Full CNC Machine & Assembly Facility

- Contract manufacturing
- Specialty Motions manufactured product lines
- Value-added custom machining from ball screws, shafting to complex system designs
- Certified CNC machinists
- 100% quality assurance & laser inspection



• Dedicated Customer Support Team

- Prompt & courteous
- Service, speed & integrity
- Authorized factory direct pricing
- Large inventory for quick delivery
- 24/7 order online
- 24/7 download linear slide CAD drawings



SMI Core Products

New products are frequently being developed by our engineers & production team. Visit our website under Products > New Products for the latest information.



Ball & Cross Roller Slides
 Ball & Cross Roller Stages
 Ball Screw Support Units
 Ball Screws
 Bushings Ball

Lead Screws
 Linear Bearings
 Linear Slides
 Micrometer Stages
 Miniature Precision Systems

Positioning Stages & Tables
 Positioning Systems
 Profile Rails
 Shafting End Supports
 Shafting Precision



Bushings Sleeve
 Cross Roller Tables

Modular Framing Aluminum T-slot
 Packaged Stepper Systems
 Pillow Blocks

Slide Ways
 Support Rail Assemblies
 Track Rollers



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